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(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3-PENTAFLUOROPROPANE AND 1,1,1,3,3,3-HEXAFLUOROPROPANE

(57) Abstract: A process for the manufacture of $\text{CF}_3\text{CH}_2\text{CHF}_2$ and $\text{CF}_3\text{CH}_2\text{CF}_3$ is disclosed. The process involves (a) reacting HF and at least one halopropene of the formula $\text{CX}_3\text{CCl}=\text{CClX}$ (where each X is independently F or Cl) to produce a product including both $\text{CF}_3\text{CCl}=\text{CF}_2$ and $\text{CF}_3\text{CHClCF}_3$; (b) reacting $\text{CF}_3\text{CCl}=\text{CF}_2$ and $\text{CF}_3\text{CHClCF}_3$ produced in (a) with hydrogen to produce a product including both $\text{CF}_3\text{CH}_2\text{CHF}_2$ and $\text{CF}_3\text{CH}_2\text{CF}_3$; and (c) recovering $\text{CF}_3\text{CH}_2\text{CHF}_2$ and $\text{CF}_3\text{CH}_2\text{CF}_3$ from the product produced in (b). In (a), the $\text{CF}_3\text{CCl}=\text{CF}_2$ and $\text{CF}_3\text{CHClCF}_3$ are produced in the presence of a fluorination catalyst including a ZnCr_2O_4 /crystalline α -chromium oxide composition, a ZnCr_2O_4 /crystalline α -chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/ α -chromium oxide composition and/or a zinc halide/ α -chromium oxide composition which has been treated with a fluorinating agent.